

AN INTERESTING ENCYRTID PARASITIC IN THE LARVAE OF CARPENTER-BEES

(Hymenoptera: Encyrtidae)

D. P. ANNECKE¹ AND R. L. DOUTT²

Through the kindness of Mr. J. S. Taylor, Division of Entomology, Port Elizabeth, the authors have been privileged to examine two series of specimens belonging to the chalcidoid family Encyrtidae which were reared from two larvae of *Xylocopa* species. Numerous specimens were obtained from each rearing, and Mr. Taylor suspected that he was dealing with a polyembryonic species. The specimens do not appear to differ generically from the descriptions of the Javanese species assigned to *Epaenatomyia* Girault by that author (Girault, 1919), or from the Indian species assigned to *Giraultella* Gahan & Fagan by Mahdihassan (1957). Unfortunately none of these species are fully described, so the generic placement of the present species is made as much on biological grounds (for the other species referred to above are also parasitic in species of *Xylocopa*) as on morphological. It should be pointed out that, in the opinion of the present authors, the generic relationships of the polyembryonic encyrtids are much in need of clarification.

Giraultella taylori Annecke and Douth, new species
(Figures 1-8)

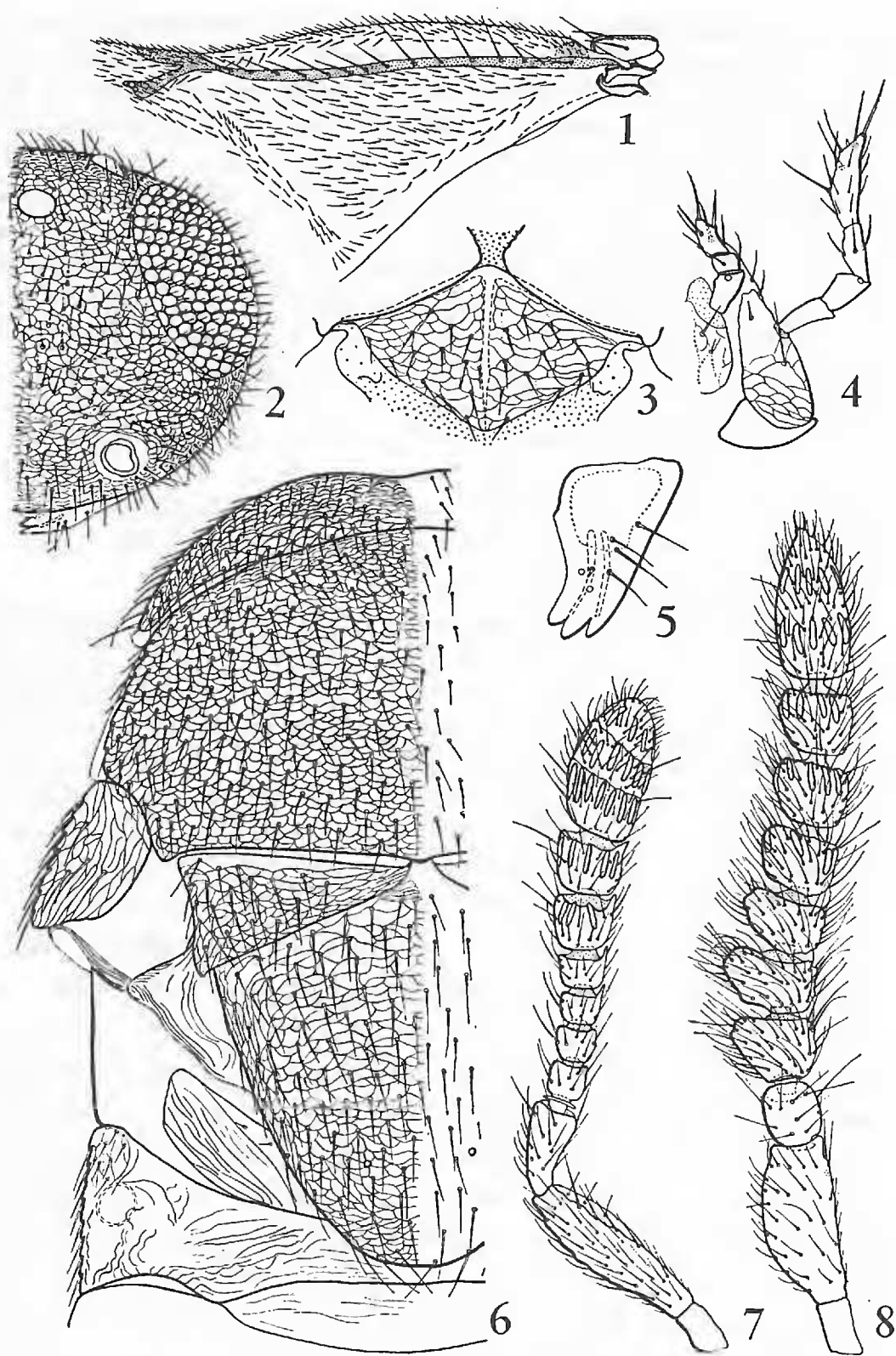
Length: 1.4–1.7 mm.

Color: Head and thorax of both sexes dark, with strong metallic green reflections on the face and head, particularly beneath and between the eyes, and less strong reflections on the thorax dorsally; lateral and ventral parts of the thorax fading to dark brown; abdomen brown, shiny, weakly metallic; legs with all coxae, the fore and middle tibiae externally, the hind femora entirely, the hind tibiae entirely except on about the internal apical third, and the last tarsal segments, brown or brownish black, the remainder whitish or brownish white except the first four segments of the fore and hind tarsi which are more dusky; mandibles brown apically, remaining mouthparts including palpi whitish; female antenna predominantly brown except the radicle and scape basally, and the pedicel apically, which are whitish; apical funicle segments and club becoming slightly lighter brown; all antennal segments more or less shiny; male antenna whitish with radicle, scape and pedicel dark shiny brown and first three or four flagellar segments brown to light brown; wings hyaline.

¹Division of Entomology, Pretoria.

²Department of Biological Control, University of California, Albany, California.

Female.—Head, in dorsal view, almost semicircular in outline, the face evenly convex between the eyes; the latter widely separated, their smallest interval just behind the anterior ocellus being nearly half the greatest width of the head; eyes with abundant small setae; ocelli in about a right angled triangle, the lateral pair removed from the eye-margins and from the occipital margin by about the diameter of an ocellus or slightly less; in frontal view. The head is about one-fourth wider than high (Fig. 2), the cheeks about one-third shorter than the greatest eye-diameter, the antennae arising near the mouth in shallow but distinct impressions, their insertions separated from the mouth by a little more than the diameter of an insertion, and from each other by slightly less than the length of the scape; mandibles (Fig. 5) apically slender, distinctly tridentate, the middle tooth slightly the longest, with two internal canals; maxillary palpi with four and labial with three segments (Fig. 4). Antennae rather short, with radicle distinct, slender, nearly twice longer than wide; scape becoming distinctly thicker distally, at widest nearly one and one half times as wide as the pedicel and about twice as long as that segment, with a shallow ventral groove apically; pedicel strongly widened apically, about one and two-thirds times as long as its apical width; a minute ring-segment present between the pedicel and the first funicle segment (Fig. 7); the latter about as wide as long, about two-thirds as wide as the pedicel; next three funicle segments subequal in size, wider than long; fifth and sixth progressively larger, both a little wider than long, the fifth a little wider than the pedicel; club three-segmented, about as long as the last three funicle segments together, the first segment the largest, the third short, bluntly rounded apically, all club segments wider than long, in greatest width nearly twice that of the pedicel; all antennal segments moderately setose, the last five with longitudinal sensoriae numbering 5, 6, 9, 9, 5, but these numbers rather variable; scape and pedicel with distinct reticulations. Sculpture strong, finely punctate-reticulate; head except occiput clothed rather densely with short setae. *Thorax*, dorsally (Fig. 6), with mesoscutum wider than long, lacking parapsidal sutures, with axillae very nearly meeting medially, with surface of mesoscutum and scutellum not strongly convex, the latter sclerite overlapping the metanotum and the anterior part of the propodeum medially; metanotum visible only laterally; propodeum with laterally placed spiracles, without carinae; ventrally, prosternum (Fig. 3) with strong, entire median carina; sculpture of the thorax less strong than on the head, entirely punctate-reticulate (Fig. 6) except for the lateral arms of the metanotum which are obliquely and irregularly striate, and the propodeum dorsally which is faintly and irregularly transversely striate; laterally the propodeum is sculptured as the rest of the thorax, mesopleura strongly sculptured longitudinally with elongate, narrow, irregular reticulations; entire thorax clothed densely with short setae except metanotum, dorsal parts of propodeum, mesopleura and mesosternum. Legs with fore femora swollen, fore tibiae with slender spur set well back from apex; all coxae, femora and tibiae with reticulated sculpture, and more or less densely setose. Fore wing (Fig. 1) with submarginal vein long and slender, without a triangular expansion, set with 10-12 stout setae, with marginal vein puncti-



EXPLANATION OF FIGURES

Figs. 1-7. *Giraultella taylori* Annecke and Doutt, new species, female. 1. Basal part of fore wing (paratype T331-1); 2. Left side of head, frontal (paratype T331-8); 3. Prosternum (paratype T331-8); 4. Palpi (paratype T331-20); 5. Mandible (paratype T331-22); 6. Left side of thorax (paratype T331-1); 7. Antenna (paratype T331-1); 8. Male antenna (paratype T331-9). Figures 1-8 del. Mrs. M. J. Meyer.

form, with stigmal distinct, and radial process well developed and set with four placoid sensilla, with postmarginal about as long as stigmal and set with stout setae; oblique hairless streak distinct, not interrupted; blade of wing beyond the streak uniformly and densely setose, basad of the streak the setae are longer and more sparse; costal cell setose along the cephalic margin, bare along the submarginal vein; marginal fringe of cilia short; hind wing less than three times longer than wide, with basal part of the venation strongly curved. *Gaster* broadly attached to the thorax, the mesophragma projecting slightly into the abdomen, its apex slightly emarginate; each tergum with a transverse row of setae, these becoming longer toward the tip of the abdomen; venter of gaster densely setose in a broad band from base to apex; ovipositor diminutive, only slightly more than one-third as long as the gaster in slide-mounted specimens, not exerted apically; gonostyli distinct, slender, less than one-half as long as the ovipositor; gastral terga distinctly reticulate, the reticulations regular medially and larger than on the thorax, becoming smaller and more irregular laterally.

Male.—Differs principally from the female in the antennae and genitalia. Antenna as in Fig. 8, the scape short, the pedicel short and only a little longer than its apical width; ring-segment extremely small; first three or four funicle segments strongly produced dorsally, particularly the second; club with no trace of a division, with longitudinal sensoriae arranged in two transverse rows; last three funicle segments bearing longitudinal sensoriae on the apical half of each segment; flagellum strongly setose, the scape and funicle with a few setae and with distinct, reticulated sculpture. Male genitalia less than one-third as long as the gaster.

Described from 6 females (holotype and paratypes) and 5 males (allotype and paratypes) mounted on card-points, and from 9 females and 11 males (paratypes) mounted on slides in Canada Balsam after treatment in caustic soda, and after dissection. This material was collected at PORT ELIZABETH, C. P., UNION OF SOUTH AFRICA, on November 9, 1960, by Mr. J. S. Taylor, for whom the species is named, and it forms part of a rearing of more than 70 specimens from a single larva of *Xylocopa* (*Mesotrichia*) *flavorufa* Degeer. The remainder of these specimens which are not designated as types are not fully formed adults. Types and paratypes to be deposited in the National Collection of Insects, Division of Entomology, Pretoria; paratypes to be deposited in the collections of the authors.

A second lot of specimens of both sexes was reared by Mr. Taylor from a larvae of *Xylocopa* (*Mesotrichia*) *divisa* Klug at Port Elizabeth, C. P., on February 27, 1961; this material, consisting of about 47 ♀♀ and 46 ♂♂, presents one or two small differences from the series described above especially in the dis-

position and number of the sensoriae on the funicle segments of the female, and until more material comes to hand from further rearings, it is not possible to be sure about their specific identity with *G. taylori* new species.

REFERENCES

GIRAULT, A. A.

1919-1921. Javanese Chalcid-flies. *Treubia* 1:53-59.

MAHDIHASSAN, S.

1957. *Giraultella krishnamurtii*. *Current Sci.* 26(6):182.

THE PRESUMED LARVA OF HIMALOPSYCHE PHRYGANEA (ROSS)

(Trichoptera: Rhyacophilidae)

OLIVER S. FLINT, JR.¹

Smithsonian Institution, Washington, D.C.

The subfamily Rhyacophilinae of the Rhyacophilidae contains two distinct genera, *Rhyacophila* and *Himalopsyche*. The validity of a third described genus, *Philocrena*, known only from larvae collected in the Caucasus, is difficult to assess in the absence of adults. The large genus *Rhyacophila* contains at least 250 species, of which 90 are found in North America. The genus *Himalopsyche* contains only 24 species with but one, *phryganea* (Ross), known to occur in the Nearctic Region. A complete taxonomic, biogeographic and phylogenetic treatment of the subfamily may be found in Ross (1956).

The larvae of the many species of *Rhyacophila* that have been described are a rather heterogeneous group. Because of the rather inaccessible central Asian range of most species of *Himalopsyche*, very few larvae in this genus are known. Lepneva (1945) described the larvae of two Asian species, *gigantea* (Martynov) and species "larva hoplura." Tsuda (1948) described the larva of *japonica* (Martynov) which is apparently the same as that described by Iwata (1928) under the name of *R. formosae* Iwata (see Ulmer 1957:127).

During some recent work on *Rhyacophila* larvae, a singular larva from Oregon was found in the Cornell collection. The length of this specimen, 32 mm., immediately eliminated all known Nearctic rhyacophiline species except *phryganea*. There are also a number of important similarities between this larva and those

¹ Formerly at Cornell University, Ithaca, N.Y.